

REMARKS

The present application has been carefully studied and amended in view of the outstanding Office Action dated January 12, 2004, and reconsideration of that Action is requested in view of the following comments.

Claim 1 recites product water in the structural edge region of the fuel cell for wetting the membrane and now recites the seals in the edge region on opposite sides of the membrane arranged between the membrane and the terminal plates. Also, claim 5 has been amended to recite a reservoir on each side of the membrane between each seal and the membrane, and wherein the product water is within both reservoirs.

Applicant respectfully submits that claims 1, 4 and 5 herein define subject matter which is not disclosed or suggested by the prior art taken alone or in combination with one another. Specifically, the fuel cell defined in claims 1 and 5 is not anticipated or rendered obvious by the EPA 0 499 593 (" '593 reference") and the storage battery of claim 4 is not rendered obvious by the combination of the '593 reference and Meacher et al US 5,858,569 ("Meacher"), for the reasons expressed below.

By way of background, the present invention is directed to a fuel cell where the membrane (2) is surrounded by two seals at the edge thereof, one on each side of the membrane, in such a manner that two reservoirs (14) are formed. During operation of the fuel cell, the reservoirs are not in the area where the actual electrochemical reaction occurs and therefore the remaining water which is formed ($H_2 + 1/2O_2 \rightarrow H_2O$) remains in the reservoirs since the fuel gas is not pressing the water through the membrane. More particularly, the fuel gas passes by the reservoirs and is humidified by the water in the reservoirs.

The present invention as recited in the claims is significantly different from the disclosure of the '593 reference in at least three distinct areas. First, the seals of the present invention stop with the membrane whereas the gasket material of the '593 reference surrounds the membrane. Moreover, the polymer electrolyte membrane (PEM) is not divided by a layer forming a water supply path as shown in Figure 2, reference numeral 1 of the '593 reference. Additionally, the present invention includes two reservoirs on both sides (electrode and anode). In the '593 reference, the narrow path 1 extends across and wets the entire surface of the diaphragm 2.

The Examiner's attention is also directed to the present specification, page 5 which describes the reservoirs of water 14 formed between the seals 5, 6 and the membrane 2. The advantages of the reservoir of water are discussed in detail.

Meacher does not cure the deficiencies of the '569 reference as described above. However, claim 4 does not simply define stacks per se, but instead claim 4 defines stacks that comprise the novel and unique fuel cell structure of claim 1.

European patent application 0 589 850 A1 shows the typical assembly of bipolar plates 9, electrodes 2, 5 and membrane 4. This reference is silent and does not suggest reservoirs in the non-active area allowing for storage of the formed water for humidification purposes.

Accordingly, for the reasons discussed above it is believed that the present application is in condition for allowance and early notice to that effect is respectfully requested.

Dated: May 12, 2004

Respectfully submitted,

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